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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,521	07/08/2002	Richard Spitz	10191/2251	7205
26646	7590	04/10/2006	EXAMINER	
KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004			JACKSON JR, JEROME	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 04/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/070,521

Applicant(s)

SPITZ ET AL.

Examiner

Jerome Jackson Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24 and 30-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24 and 30-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. The 35 USC 112 1st paragraph rejection is removed. As per applicant's arguments the addition of multiple embodiments or teachings into a single device is not seen to be new matter as applicant did not teach against using them together and to one of ordinary skill the embodiments would be cumulative and not exclusive of each other. Nevertheless, Cline's teachings to one of ordinary skill make applicant's claims obvious structure and there are certain observations that the claims are vague and indefinite.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24 and 30-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is no way to exactly determine the metes and bounds of claim 24 as the limitation "doped at different concentrations" is vague and indefinite. What are the different concentrations and how is one of ordinary skill to determine them ? The specification teaches a 2×10^{19} for the higher doped layer but there is neither a thickness nor a doping concentration stated for the other doped region. One of ordinary skill cannot determine the exact metes and bounds of the claim structure. Broadly one of ordinary skill would understand that the device needs to remain in the Zener regime of breakdown but applicant has not adequately stated or claimed what the structure and "concentration" of the "other" layer of the group is. The claims are collectively vague and

indefinite of exact structure as no claim states the exact structure to enable anyone to know the exact metes and bounds of the claims.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 24 and 30-42 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cline '171, of record.

Initially, it is considered that one of ordinary skill is one who understands quantum physics and the process of Zener diode behavior, and particularly comprehends the scope of Cline's patent and obvious variations.

Cline comprehends, as applicant also has stated, that Zener diode behavior above about 5 volts results in avalanche breakdown and temperature variation problems. Thus Cline and applicant seek to limit the Zener diode operation of each junction to the "Zener" regime rather than the avalanche regime. To one of ordinary skill this obviously means that heavy doping is necessary for the p and n type regions of the Zener diode. Applicant states that 2×10^{19} is the proper doping for the p+ or n+ region. Cline states that the breakdown voltage is dependent on doping (col. 5) and states (col. 6) that 5 Volt Zener diodes have approximately a zero temperature coefficient. Cline also states that such diodes need to be operated at a constant current or else have a temperature compensating diode integrated therein. Cline teaches a series of Zener diodes (figure 6) and because operation without compensating diodes is about 5 volts or

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less one of ordinary skill would understand that doping about 2×10^{19} would be considered an obvious design choice for both n and p type diode regions. Furthermore, because one of ordinary skill understands the theory behind Zener breakdown it would be considered obvious to adjust the dopings, number of series connected diode regions, etc. in Cline to practice Zener diodes of different breakdown voltage. The process of Cline results in nearly constant doping concentration of the regions, however, simple diffusion physics determines that there must be some difference in concentration between the center of the regions and the periphery at the junctions, and because applicant's claims and specification are not specific enough to determine what the "other" concentration is, the claims are not seen to structurally distinguish over Cline where the center area of a doped diode region is considered one constant doped region at least along the vertical direction and the peripheral area is considered another constant doped region along the vertical direction. Accordingly claim 24 is anticipated or at least obvious over the teachings and suggestions of Cline. Other claims are likewise considered obvious design choices, as stated above, to an engineer familiar with Zener diode operation and semiconductor device physics, and the teachings of Cline.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerome Jackson Jr. whose telephone number is 571-272-1730. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jj


JEROME JACKSON
PRIMARY EXAMINER